AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (cancelled).

2. (cancelled).

3. (previously presented): An optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means, at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; wherein the illumination light is transmitted through the sample mounted on the sample mounting table and then converges at the converging point in said optical path; and

a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point in said optical path, which selectively blocks a part of said illumination light transmitted through said sample,

wherein said objective lens is adapted to be focused on either one of said diffraction image plane and said sample.

4. (original): An optical microscope apparatus according to claim 3, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

5. (original): An optical microscope apparatus according to claim 4, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

6. (cancelled).

7. (previously presented): An optical microscope apparatus according to claim 18, further comprising a polarizer disposed between said illuminating means and sample mounting table, and an analyzer disposed after said sample mounting table in said optical path.

8. (previously presented): An optical microscope apparatus according to claim 7, wherein said polarizer and said analyzer are rotatable about an optical axis of incident light.

9. (original): An optical microscope apparatus according to claim 7, wherein said sample mounting table is rotatable about an optical axis of incident light.

10. (original): An optical microscope apparatus according to claim 7, wherein each of said polarizer and analyzer is a linearly polarizing device.

11. (original): An optical microscope apparatus according to claim 7, wherein one of said polarizer and analyzer is a circularly polarizing device, whereas the other is a linearly polarizing device.

12. (original): An optical microscope apparatus according to claim 7, wherein each of said polarizer and analyzer is a circularly polarizing device.

13. (cancelled).

14. (previously presented): An optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means, at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; wherein the illumination light is transmitted through the sample mounted on the sample mounting table and then converges at the converging point in said optical path;

a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point in said optical path, for selectively blocking a part of said illumination light transmitted through said sample;

a polarizer disposed between said illuminating means and sample mounting table; and

an analyzer disposed after said sample mounting table in said optical path,

wherein said objective lens is adapted to be focused on either one of said diffraction image plane, and said sample.

15. (original): An optical microscope apparatus according to claim 14, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

16. (original): An optical microscope apparatus according to claim 15, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

17. (original): An optical microscope apparatus according to claim 16, wherein said illumination light is monochromatic light.

18. (previously presented): An optical microscope apparatus, comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means, at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point; and

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; and

a phase plate, disposed on a diffraction image plane, which causes light incident thereon to shift its optical phase, wherein said diffraction image plane is orthogonal to an optical axis of said illumination light and includes said converging point in said optical path;

wherein said illuminating means emits monochromatic light; the illumination light is transmitted through the sample mounted on the sample mounting table and then converges at the converging point in said optical path; and said objective lens is adapted to be focused on either one of said diffraction image plane and said sample.

19. (previously presented): An optical microscope apparatus according to claim 18, wherein said illuminating means comprises a light source for emitting white light, and a

monochromating device, which converts said white light to monochromatic light, disposed behind said light source.

20. (previously presented): An optical microscope apparatus according to claim 18, wherein said phase plate causes light incident thereon at and near said converging point to have a first optical phase and causes all other light incident thereon to have a second optical phase, wherein the first optical phase and the second optical phase are different from each other by about $\pi/2$.

21. (previously presented): An optical microscope apparatus according to claim 20, wherein said phase plate also has a function of attenuating an intensity of light incident on and near said converging point in said optical path.

22. (original): An optical microscope apparatus according to claim 18, wherein said objective lens is adapted to be focused on each of said diffraction image plane and said sample.

23. (previously presented): An optical microscope apparatus according to claim 22, further comprising a spatial filter, disposed nearly at a position of said diffraction image plane, for selectively blocking a part of said illumination light transmitted through said sample.

24. (original): An optical microscope apparatus according to claim 23, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

25. (original): An optical microscope apparatus according to claim 24, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

26. (previously presented): An optical microscope apparatus, comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means, at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; and

a linearly polarizing device disposed on a diffraction image plane, wherein the diffraction image plane is orthogonal to an optical axis of said illumination light, and includes said converging point; and

a linear polarization analyzer, disposed after said diffraction image plane in said optical path, wherein the linear polarization analyzer is rotatable about an optical axis of the incident light;

wherein the illumination light is transmitted through the sample mounted on the sample mounting table and then converges at the converging point in said optical path; and said objective lens is adapted to be focused on either one of said diffraction image plane and said sample.

27. (original): An optical microscope apparatus according to claim 26, wherein said objective lens is adapted to be focused on each of said diffraction image plane and said sample.

28. (previously presented): An optical microscope apparatus according to claim 27, further comprising a spatial filter, disposed nearly at a position of said diffraction image plane, for selectively blocking a part of said illumination light transmitted through said sample.

29. (original): An optical microscope apparatus according to claim 28, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

30. (original): An optical microscope apparatus according to claim 29, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

31. (original): An optical microscope apparatus according to claim 30, wherein said illumination light is monochromatic light.

32. (previously presented): A microscope observing method using an optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; wherein said illumination light is transmitted through said sample mounted on the sample mounting table and then converges at the converging point in said optical path; and

a spatial filter, disposed at a diffraction image plane, which selectively blocks a part of said illumination light transmitted through said sample, wherein the diffraction image plane is orthogonal to an optical axis of the illumination light and includes said converging point; and

wherein said objective lens is adapted to be focused on either one of said diffraction image plane and said sample;

said method comprising:

focusing said objective lens onto said diffraction image plane, and observing therewith a diffraction image of said sample formed on said diffraction image plane by said illumination light;

adjusting said spatial filter such that only light from a desirable region of said diffraction image is transmitted therethrough; and

focusing said objective lens onto said sample, and observing therewith said sample with said light transmitted through said spatial filter.

33. (previously presented): A microscope observing method using an optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in said optical path such that said illumination light is incident thereon, wherein said illumination light is transmitted through said

sample mounted on the sample mounting table and then converges at the converging point in said optical path;

a polarizer disposed between said illuminating means and said sample mounting table;

an analyzer disposed after said sample mounting table in said optical path; and

a spatial filter, disposed at a diffraction image plane, which selectively blocks a part of said illumination light transmitted through said sample, wherein said diffraction image plane is orthogonal to an optical axis of said illumination light and includes said converging point; wherein said objective lens is adapted to be focused on either of said diffraction image plane and said sample;

said method comprising:

focusing said objective lens onto said diffraction image plane, and observing therewith a diffraction image of said sample formed on said diffraction image plane by said illumination light and

adjusting said spatial filter such that only light from a desirable region of said diffraction image is transmitted therethrough; and

focusing said objective lens onto said sample and observing said sample with said light transmitted through said spatial filter.

34. (cancelled).

35. (cancelled).

36. (previously presented): A microscope observing method using an optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illumination means at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in said optical path, such that said illumination light is incident thereon; wherein said illumination light is transmitted through said sample mounted on the sample mounting table and then converges at the converging point in said optical path; and

a spatial filter, disposed at a diffraction image plane, which selectively blocks a part of said illumination light transmitted through said sample, wherein the diffraction image plane is orthogonal to an optical axis of the illumination light and includes said converging point; and therein said objective lens is adapted to be focused on either one of said diffraction image plane and said sample;

said method comprising:

emitting a single beam of illumination light from the illuminating means and focusing the illumination light at said converging point;

mounting a sample on the sample mounting table between said illuminating means and said converging point;

converging said illumination light at said converging point;

selectively blocking a part of said illumination light transmitted through said sample; and

changing the position of the converging point to be in or out of said optical path of the illumination light in the direction of the optical axis of said objective lens to adjust the size of the diffraction image.

37. (previously presented): A microscope observing method using an optical microscope apparatus comprising:

illuminating means having a single point light source;

an optical converging system which focuses a single beam of illumination light from the illuminating means at a converging point;

a sample mounting table for mounting a sample between said illuminating means and said converging point;

an objective lens positioned after said converging point in an optical path, such that said illumination light is incident thereon; wherein said illumination light is transmitted through said sample mounted on the sample mounting table and then converges at the converging point in said optical path;

a polarizer disposed between said illuminating means and sample mounting table;

an analyzer disposed after said sample mounting table in said optical path; and

a spatial filter, disposed at a diffraction image plane, which selectively blocks a part of said illumination light transmitted through said sample, wherein said diffraction image plane is orthogonal to an optical axis of said illumination light and includes said converging point; and wherein said objective lens is adapted to be focused on either of said diffraction image plane and said sample;

said method comprising:

emitting and polarizing a single beam of illumination light from the illuminating means, and focusing the single beam at said converging point;

mounting a sample on the sample mounting table between said illuminating means and said converging point;

converging said illumination light at said converging point;

selectively blocking a part of said illumination light transmitted through said sample; and

changing the position of the converging point to be in or out of said optical path of the illumination light in the direction of optical axis of said objective lens to adjust the size of the diffraction image.

38. (cancelled).

39. (cancelled).

40. (new): An optical microscope apparatus comprising:

illuminating means having a single point light source and optical converging system for emitting a single beam of illumination light which converges at a point in a space;

a sample mounting table for mounting a sample between said illuminating means and said converging point of said illumination light;

an objective lens disposed such that said illumination light is incident thereon after light transmitted through or reflected by said sample is once converged at said converging point; and

a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point, for selectively blocking a part of said illumination light transmitted through or reflected by said sample,

wherein said objective lens is adapted to be focused on either one of said diffraction image plane and said sample.

41. (new): An optical microscope apparatus according to claim 40, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

42. (new): An optical microscope apparatus according to claim 41, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

43. (new): An optical microscope apparatus comprising:

illuminating means having a single point light source and optical converging system for emitting a single beam of illumination light which converges at a point in a space;

a sample mounting table for mounting a sample between said illuminating means and said converging point of said illumination light;

an objective lens disposed such that said illumination light is incident thereon after light transmitted through or reflected by said sample is once converged at said converging point;

a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point, for selectively blocking a part of said illumination light transmitted through or reflected by said sample; and

a polarizer disposed between said illuminating means and sample mounting table, and an analyzer disposed between said sample mounting table and eyepiece,

wherein said objective lens is adapted to be focused on either one of said diffraction image plane, and said sample.

44. (new): An optical microscope apparatus according to claim 43, further comprising an adjusting mechanism adapted to arbitrarily change a distance between said diffraction image plane and said sample.

45. (new): An optical microscope apparatus according to claim 44, further comprising an adjusting mechanism for substantially aligning a direction of light transmitted through said spatial filter and an optical axis of said objective lens with each other.

46. (new): An optical microscope apparatus according to claim 45, wherein said illumination light is monochromatic light.

47. (new): A microscope observing method using an optical microscope apparatus comprising illuminating means having a single point light source and optical converging system for emitting a single beam of illumination light which converges at a point in a space; a sample mounting table for mounting a sample between said illuminating means and said converging point of said illumination light; an objective lens positioned after said converging point such that said illumination light is incident thereon, wherein said illumination light is transmitted through or reflected by said sample and wherein said illumination light converges at said converging point; and a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point, for selectively blocking a part of said illumination light transmitted through or reflected by said sample, said objective lens being adapted to be focused on either one of said diffraction image plane and said sample;

said method comprising the steps of focusing said objective lens onto said diffraction image plane so as to observe a diffraction image of said sample formed on said diffraction image

plane by said illumination light and adjusting said spatial filter such that only light from a desirable region of said diffraction image is transmitted therethrough; and then focusing said objective lens onto said sample so as to observe said sample with said light transmitted through said spatial filter.

48. (new): A microscope observing method using an optical microscope apparatus comprising illuminating means for emitting an illumination light which converges at a point in a space; a sample mounting table for mounting a sample in front of said converging point of said illumination light; an objective lens positioned after said converging point such that said illumination light is incident thereon, wherein said illumination light is transmitted through or reflected by said sample and wherein said illumination light converges at said converging point; a polarizer disposed between said illuminating means and sample mounting table; an analyzer disposed between said sample mounting table and eyepiece; and a spatial filter, disposed at a position of a diffraction image plane, for selectively blocking a part of said illumination light transmitted through or reflected by said sample, said diffraction image plane being orthogonal to an optical axis of said illumination light and including said converging point; said objective lens being adapted to be focused on each of said diffraction image plane and said sample;

said method comprising the steps of focusing said objective lens onto said diffraction image plane so as to observe a diffraction image of said sample formed on said diffraction image plane by said illumination light and adjusting said spatial filter such that only light from a desirable region of said diffraction image is transmitted therethrough; and then focusing said

objective lens onto said sample so as to observe said sample with said light transmitted through said spatial filter.

49. (new): A microscope observing method using an optical microscope apparatus comprising illuminating means having a single point light source and optical converging system for emitting a single beam of illumination light which converges at a point in a space; a sample mounting table for mounting a sample between said illuminating means and said converging point of said illumination light; an objective lens positioned after said converging point such that said illumination light is incident thereon, wherein said illumination light is transmitted through or reflected by said sample and wherein said illumination light converges at said converging point; and a spatial filter, disposed at a position of a diffraction image plane which is orthogonal to an optical axis of said illumination light, including said converging point, for selectively blocking a part of said illumination light transmitted through or reflected by said sample; said objective lens being adapted to be focused on either one of said diffraction image plane and said sample; said method comprising the steps of:

emitting an illumination light which converges at a point in a space,

mounting a sample in front of said converging point of said illumination light such that said illumination light is transmitted through or reflected by said sample,

converging said illumination light at said converging point,

selectively blocking a part of said illumination light transmitted through or reflected by said sample, and

changing the position of the converging point of the illumination light in the direction of the optical axis of said objective lens to adjust the size of the diffraction image.

50. (new): A microscope observing method using an optical microscope apparatus comprising illuminating means for emitting an illumination light which converges at a point in a space; a sample mounting table for mounting a sample in front of said converging point of said illumination light; an objective lens positioned after said converging point such that said illumination light is incident thereon, wherein said illumination light is transmitted through or reflected by said sample and wherein said illumination light converges at said converging point; a polarizer disposed between said illuminating means and sample mounting table; an analyzer disposed between said sample mounting table and eyepiece; and a spatial filter, disposed at a position of a diffraction image plane, for selectively blocking a part of said illumination light transmitted through or reflected by said sample, said diffraction image plane being orthogonal to an optical axis of said illumination light and including said converging point; said objective lens being adapted to be focused on each of said diffraction image plane and said sample; said method comprising the steps of:

emitting and polarizing an illumination light which converges at a point in a space,

mounting a sample in front of said converging point of said illumination light such that said illumination light is transmitted through or reflected by said sample,

converging said illumination light at said converging point,

selectively blocking a part of said illumination light transmitted through or reflected by said sample, and

changing the position of the converging point of the illumination light in the direction of optical axis of said objective lens to adjust the size of the diffraction image.